

ABSTRACT OF THE DISCLOSURE

A sound separation apparatus for separating a target signal from a mixed input signal, wherein the mixed input signal includes the target signal and one or more sound signals emitted from different sound sources. The sound separation apparatus according comprises a frequency analyzer for performing a frequency analysis on the mixed input signal and calculating spectrum and frequency component candidate points at each time. The apparatus further comprises feature extraction means for extracting feature parameters which are estimated to correspond with the target signal, comprising a local layer for analyzing local feature parameters using the spectrum and the frequency component candidate points and one or more global layers for analyzing global feature parameters using the feature parameters extracted by the local layer. The apparatus further comprises a signal regenerator for regenerating a waveform of the target signal using the feature parameters extracted by the feature extraction means.

Since both of local feature parameters and global feature parameters can be processed together in the feature extraction means, the separation accuracy of the target signal is improved without depending on the accuracy for extracting feature parameters from the input signal. Feature parameters to be extracted include frequencies and amplitudes and their variation rates for the frequency component candidate points, harmonic structure, pitch consistency, intonation, on-set/off-set information and/or sound source direction. The number of the layers provided in the feature extraction means may be changed according to the types of the feature parameters to be extracted